CALIFORNIA HYDROGEN HIGHWAY NETWORK

HYDROGEN - THE NEXT STEP IN AIR QUALITY IMPROVEMENT FACT SHEET

The mission of the Air Resources Board (ARB) is to attain and maintain healthy air quality, conduct research into the causes of and solutions to air pollution and to systematically attack the serious problem caused by motor vehicles, which are the major causes of air pollution in the State.

Although air quality in California has significantly improved over the past 50 years, it remains the nation's smoggiest state. Air monitoring records show that more than 90 percent of Californians breathe unhealthy levels of air pollution sometime during a year. Health studies show that one in seven children ages 6-17 in the state have been diagnosed with asthma. In 2003, more than 60 percent of the state's air pollution came from mobile sources such as cars and trucks that rely on gasoline and diesel fuels[1].

The burning of these fossil fuels produces pollution that not only damages human health but also generates greenhouse gases that contribute to the unsustainable climate change of the planet[2]. In addition to air quality problems, the world is running out of easily accessible petroleum[3] and almost 60 percent of the petroleum imported into the U.S.[4] is from geopolitically unstable areas of the world.

The ARB has tackled these challenges in a variety of ways. To date, the ARB has had one of the most successful "command and control" environmental protection systems in the world. The ARB continues to set aggressive performance standards for emissions from new engines allowing California to have the cleanest new vehicles in the world.

Another more recent approach to reaching our health-based air quality standards is the use of grant programs to offset the incremental cost of low-emission technologies. The Carl Moyer Program is one such program that has led to the early introduction of low-emission technologies and has accelerated old equipment turnover leading to accelerated improvements in air quality.

Although these approaches have been successful and need to be continued, California is engaged in a new era of environmental protection. We need to look to the future now in order to realize our health based air quality goals.

For these reasons, California should pursue hydrogen as a transportation fuel. Hydrogen-powered vehicles have zero emissions and hydrogen is generated by a variety of sources, some of them clean and renewable. While available technologies such as hybrid vehicles do reduce our dependence on foreign oil

and clean our air, we must also invest in totally eliminating our dependence on fossil fuels and their related air emissions[5]. The ARB is the agency that can successfully work to achieve this goal.

Moving toward a hydrogen economy in California offers the possibility of energy independence and clean, sustainable transportation. Hydrogen can revolutionize human mobility and the ways we harness the world's energy resources. Hydrogen can be used to power vehicles with very low environmental impacts. It can be produced through a variety of processes using a range of feedstocks, including natural gas, methanol, ethanol, biomass, and water. As an emerging transportation fuel, the promise of hydrogen is driving innovative new designs of high-efficiency vehicles that offer important environmental and energy diversification benefits.

The role of the California Hydrogen Highway Network (CA H2 Net) is to assure that hydrogen infrastructure is in place to enable fuel cells and other hydrogen technologies to be used by consumers as those technologies reach commercial readiness.

The CA H2 Net is a key part of California's strategy to achieve the State's vision of a secure energy future that simultaneously addresses our environmental, public health and economic challenges working in partnership with other components of the State's programs to advance energy efficiency and renewable energy. The goals of the CA H2 Net are a 30 percent reduction in greenhouse gas emissions, 20 percent utilization of renewable resources for the production of hydrogen and to reduce toxic and smog forming emissions relative to conventional vehicles and fuels.

The ARB's vision has led the nation and world toward cleaner, more efficient technologies. Air quality and climate change all point to the need to promote and support a hydrogen future. We must continue to pursue innovative strategies, and focus on the zero and near-zero emission technology.

[1] Sacramento Bee, Alan Lloyd, June 18, 2005
[2] Intergovernmental Panel on Climate Change, 2001. Third Assessment Report of the Intergovernmental Panel on Climate Change.
[3]This is an increasingly recurring theme in the petroleum industry as evidenced by: "ChevronTexaco Warns of Global Bidding War," by Deepa Babington, Reuters, February 15, 2005; "Shell cuts oil reserves again as profits soar," by Tom Bergin, Reuters, February 3, 2005; "Shell, Exxon Tap 'High Cost' Oil Sands, Gas as Reserves Dwindle," Bloomberg, February 18, 2005.
[4] Crude Oil and Total Petroleum Imports Top 15 Countries", United States Department of Energy—Energy Information Administration, February 23, 2003.
[5] Sacramento Bee, Alan Lloyd, June 18, 2005